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SENSE-DATA AND THE MIND-BODY PROBLEM

In the latter part of the nineteenth century, philosophers, physicists, and the new psychologists agreed to this extent in their conceptions of the mind-body problem: they all had a healthy respect for the integrity of both the mental and the physical domains. Whatever their particular commitments, whether phenomenalist, dualist, or materialist, they all accepted the reality of both mental and physical phenomena – where mental phenomena are, in the first instance, phenomenally characterized and perhaps equated with the contents of consciousness, and physical phenomena abstract from the knowing subject and sustain laws governing changes in spatiotemporally characterized objects. This acceptance of the mental domain held for physicists such as Ludwig Boltzmann, Ernst Mach, and Hermann Helmholtz no less than philosopher psychologists such as Wilhelm Wundt and William James (despite their other differences).

In the early and mid twentieth century the situation changed, at least for certain psychologists and philosophers. There arose a stringent skepticism toward – or even a fear of – the mental, initially in all its guises, then later with respect to the phenomenal. This attitude at first expressed itself in Watson's and Skinner's behaviorisms, which shared the aim of eliminating all mental notions from cognitively serious discourse, and Carnap's and Hempel's physicalism, which aimed to reduce all talk of mental states to a purely physical language (or, subsequently, an observational physical thing-language). These movements were driven by conceptions of objectivity that seemed to exclude the *phenomenal* from the domain of the *objective* on grounds of privacy and subjectivity. The subsequent "linguistic turn" favored language, as public and social, over the contents of experience as the locus of cognitive content. If the language were restricted to a physical (or physical thing) discourse, then the mental and the phenomenal might be rejected outright, or what was legitimate in mentalistic discourse might be reduced to physical talk (or physical thing talk).

The outright rejection or reduction of the mental was tempered through further development of the linguistic turn, in which cognition and thought came to be conceived linguomentalistically. As information theory and the computer analogy arrived, language was conceived as providing a model for mental states and processes (inclusive of intentionally characterized thought). In the second half of the

twentieth century, there arose the linguistic model of cognition and perception. In its extreme form, it reduced all cognitive states to linguistic states, or formulae in a language of thought (Fodor 1975, 1987). In a slightly more relaxed version, it assimilated all mental content to propositional content, reducing or denying the phenomenal character of perceptual experience (Dretske 1981, 1995, Tye 1995, chs. 3–6).¹

The ongoing flight from the phenomenal was driven partly by the epistemological factors already mentioned – the notion that, by contrast with (allegedly) private phenomenal experience, language is a public medium, and that statements about physical objects concern publicly available states of affairs (e.g., Dummett 1993, ch. 9). It was also driven by a metaphysical thesis concerning the domain of the natural: that the natural is the physical or the material, so that mentalistic notions, especially those connected with the qualitative character of experience, do not sit easily with, or are precluded by, a proper naturalism.

These contrasting attitudes toward the phenomenal were both driven by problems arising from the mind-body relation. The earlier scientists and philosophers, including Helmholtz, Mach, and James – and subsequently Russell – acknowledged the difficulty of explaining mind in terms of body or bodily states, physically described. Mach, James, and Russell opted for a phenomenal realism, according to which phenomenally characterized entities are more basic than either physical objects or the psychological “subject” or “self.” This position reached its fullest expression in the neutral monism of James and Russell, which treats Mach’s elements, James’ primal stuff, and Russell’s momentary particulars (his successors to sense-data) as neutral but real elements, out of which the derivative domains of the mental and physical are to be constructed. These elements are phenomenally characterized, for example, as color patches, and so are modeled on perceptual states. But they are intrinsically neither mental nor physical (see Hatfield 2003b). They can be regarded as falling in the domain of either the mental or the physical depending on the context in which they are viewed: as a part of a series of elements exhibiting a physical process, such as the flowing of stream, or as part of a series of individual experiences, such as a walk in the park (including a pass by the stream).

This neutral monism, though admirable in its respect for the phenomenal, is in the end a crazy position. The physical world can’t be constructed out of color patches, or colored points. One well known problem here, which beset later

¹ Dretske of course does not think of information as, in the first instance, carried by “natural” languages (such as English or German), which he views as artificial or “conventional” representation systems (1995, pp. 8, 19). He considers the contents of natural representations (including perceptual representations) to arise from indicator information; but this information is itself propositionally characterized (1981, pp. 65–8, 176), or (equivalently) characterized as the representation of a fact (1995, p. 9). Such propositional content is conceived to exist independently of natural language. Tye (1995, pp. 101, 121–3, 134–43) also treats sensory representations propositionally and symbolically, while distinguishing them from beliefs and conceptual content.

attempts to construct knowledge of the physical out of talk of color points and the like, is the complexity of the logical constructions involved and the purported failure fully to reduce the meaning of physical object statements to statements about elementary experiences.² Although such problems might well lead one to abandon the phenomenal as an adequate basis for analyzing talk of the physical, in my view the really big problem for neutral monism is that physical objects just aren’t made of perception-like entities, of color patches or colored points. They are not made of sensational or phenomenal elements, but of the chemical elements in the periodic table, which are themselves composed of subatomic particles, which are in turn composed of yet more basic particles or energy packets or what not.

In the first two sections of the paper I will characterize the nineteenth century respect for the phenomenal by considering Helmholtz’s position and James’ and Russell’s move to neutral monism. Then in the third section I want to show a moment’s sympathy with those who recoiled from the latter view. But only a moment’s. The recoil overshot what was a reasonable response, and denied the reality of the phenomenal, largely in the name of the physical or the material. In the final two sections of the paper I will indicate a third way, which retains a healthy respect for the mental and for the mind-body relation, does not attempt to equate objects with congeries of sensations, and does not attempt to deny the reality of the phenomenal. In fact, I will claim that on some conceptions (and not merely idealist-phenomenalist conceptions), the phenomenal is a fact of nature, and hence a part of the natural world. Some aspects of this third way are familiar in the various representational and critical realisms of the twentieth-century. But the realization – or, more neutrally, the conception – that the natural might include

² Carnap’s attempt in the *Aufbau* to reconstruct cognition on an “autopsychological” basis is a late expression of the phenomenalist epistemological tendencies found in Mach, James, and Russell. Indeed, he (1928/1967, §162) explicitly aligned himself with the Russell’s (1921) position, as reportedly derived from James (also noting similarities with Mach’s position), though under a strictly “constructionist” or “constitutional” interpretation (which differs from Russell’s ontological concerns, and focuses on accounting for intersubjective knowledge – see Richardson 1998). In introducing his “autopsychological” basis of “elementary experiences,” he referred (1928/1967, §65) to the work of Moritz Schlick, Wilhelm Schuppe, Hans Cornelius, Heinrich Gomperz, Hans Driesch, and the Gestalt psychologists Max Wertheimer and Wolfgang Köhler. While the use of logical construction was his original methodological contribution in the *Aufbau*, the appeal to a Gestalt conception of “whole experiences” was his leading substantive contribution to the constructive project. He considered the position he developed to be compatible with materialism (1928/1967, §59), conceived scientifically rather than metaphysically. Later philosophers (e.g., Quine 1953, Putnam 1981, p. 181) considered the failure of phenomenalist construction programs like that of the *Aufbau* to motivate adoption of a physicalist language, or (subsequently) an “observational thing-language,” as the reduction basis for all science and any cognitively significant talk (discussed below). Carnap himself, as late as 1961, endorsed the possibility of epistemic reconstruction on the basis of sense-data, but stated a preference for an observational physical-thing language as affording greater intersubjective agreement (1928/1967, pp. vii–viii; also 1963, p. 19).

the phenomenal is less familiar. Yet this position has its predecessors too, not only among the physicists and psychologists of the nineteenth century, but among major physicists (as opposed to physicalist philosophers) and psychologists of the twentieth.

1. RESPECT FOR THE PHENOMENAL

For physicists, philosophers, and psychologists of the nineteenth century, the existence of a domain of mental phenomena, phenomenally conceived, was a fact. By "phenomenally conceived" I mean conceived in such a way that sensations present qualities that are considered to be peculiar to experience, in the sense that they cannot be literally identified with the intrinsic properties of physical objects. For philosophers today, one way to put this point is to say that nineteenth-century physicists and philosophers accepted, as a matter of course, some version of the distinction between primary and secondary qualities. They held that phenomenal color is found only in perceptual experience, and that its causal basis in objects must be described in the wholly physical language of wavelengths and electromagnetic energy. This did not necessarily mean that they denied that bodies may truly be *said* to possess colors,³ but it did mean that they analyzed what it is for a body to be colored either in purely physical terms alone (appealing solely to wavelengths and so leaving color perception and color experience aside), or in relation to the character of experience that objects and light cause in perceivers. They did not attempt to reduce the latter factor, involving appeal to phenomenal experience, to statements about physical properties alone.

A characteristic statement of the acceptance of the mental or the psychological into the domain of natural science may be found in Helmholtz's *Physiological Optics*. In that work the nineteenth-century physicist and physiologist examined not only the physical properties of light and the anatomy and physiology of

³ The assimilation of scientific and philosophical theoretical positions concerning so-called secondary qualities to a context of ordinary language, so as to have such positions say, in ordinary terms, that bodies "are not really colored," simply creates a red herring. Hacker (1987) claims that scientists and philosophers asserted, in an ordinary-language context (pp. 2, 39–40, 5–60), that "what we see ... is not (objectively, publicly) coloured" (p. 56). Scientists and philosophers have made verbally similar claims, but the context was theoretical, not ordinary. They were making a claim about a certain theory of the physics of sensory qualities – a theory that denied that color is a "real quality" (by contrast with Aristotelian theories, which survived into the nineteenth century, according to which color is a real quality, that is, a primitive physical property that is "like" our experience of it). The adoption of a position that distinguishes phenomenal qualities from their physical bases (as secondary qualities) does not preclude one, in an ordinary context, from speaking of matching the color of one's socks with the color of one's pants, any more than did the acceptance of the proposal that the earth rotates diurnally preclude one from speaking of the sunrise.

the eye, but also the "sensations of sight," including experiences of light and color, and the "perceptions of sight," including the experience of size, shape, and distance, single or double vision, and depth perception. At the end of the work, in discussing whether to accept physiological explanations of the latter phenomena (the perceptions of sight, and especially the facts of single and double vision), he wrote:

I acknowledge that we are still far from a natural-scientific understanding of psychic phenomena. We may agree with the spiritualists that such understanding is absolutely impossible, or we may take precisely the contrary view along with the materialists, according as we are inclined toward one speculation or the other. For the natural philosopher, who must stick to factual relations and seek their laws, this is a question for which he possesses no basis for choice. It must not be forgotten that materialism is just as much a metaphysical speculation or hypothesis as is spiritualism, and that it therefore does not provide one with the right to choose between factual relations in natural science without a factual basis. [1867/1910 3:432]

Three points are of interest here. First, Helmholtz allows that there are factual relations in the domain of the "psychic phenomena" (*psychischen Erscheinungen*). Second, he characterizes the "materialists" as those who hold that a (presumably "full") "natural-scientific" understanding of such phenomena is possible, which would result from explaining the phenomena by appeal to brain processes. But, third, he contrasts the natural philosopher (that is, the natural scientist) with the materialist, and characterizes materialism as a metaphysical speculation.

Now it may be thought that Helmholtz is proposing that we simply bide our time until a materialist understanding of sensation and perception becomes available. That is, it might seem as if he were saying that, short of a materialistic explanation of the mental, there is no natural-scientific work to be done with the psychical phenomena at all. But that is not the attitude he took, either in this work or in his subsequent publications (e.g., Helmholtz 1878, 1894). In the continuation of the above passage, he made clear that the actuality of the psychic is to be accepted, whether one shares the metaphysical aspirations of the materialist or not:

But no matter what view is taken of the psychic activities, and no matter how hard it may be to explain them, they are in any case actually extant, and their laws are to a certain extent familiar to us from daily experience. [1867/1910 3:432]

These laws include what Helmholtz termed the "association of ideas" (*Ideenassoziation*). In his view, such laws operate over phenomenally characterized sensations, that is, sensations characterized by (experiential) quality and intensity. In perception, they yield phenomenally characterized experiences of objects at a distance, perceived with a certain color, and so on.

In the continuation of the passage, Helmholtz showed skepticism about employing the materialist hypothesis in a natural-scientific account of sense perception

(1867/1910 3:437–46; see also Hatfield 1990, ch. 5). Together with the quotations given, this yields two conclusions. First, he had a healthy respect for the domain of the phenomenal. Second, he had a healthy respect for the mind-body problem itself, and for the difficulty of attempting to explain the phenomenal by appeal to neural structures and processes. In both respects he was (or came to be) in good company. Of the physicists and philosophers mentioned above, Mach, James, and Russell (in the teens and twenties) agreed with both points; among the rest, only Boltzmann (1897) advocated a materialist perspective and asserted the identity of sensations and other mental processes with brain processes; but he did not deny the reality of the phenomenal, which he had no intention of reducing away.

2. SENSE-DATA AND NEUTRAL MONISM

In the last decades of the nineteenth and first decade of the twentieth century, this appreciation of the reality of the phenomenal spawned a position that Russell termed “neutral monism.” It is the position that there is only one stuff in the world and that it is to be characterized in phenomenal terms (in the case of vision, phenomenal color is used), in other words, in terms of the content of perceptual experience. This position is expressed in the following series of quotations, the first from Mach:

As soon as we have perceived that the supposed unities “body” and “ego” are only makeshifts, designed for provisional survey and for certain practical ends (so that we may take hold of bodies, protect ourselves against pain, and so forth), we find ourselves obliged, in many profound scientific investigations, to abandon them as insufficient and inappropriate. The antithesis of ego and world, sensation (phenomenon) and thing, then vanishes, and we have simply to do with the *connexion* of the [previously mentioned] *elements*. [Mach 1886/1897, p. 11]

Mach analyzed the concept of body into a series of “elements” characterized in terms of the phenomenal properties of sensation. “Bodies” are convenient makeshifts cobbled together out of certain series of such elements. The ego is another makeshift, specified by focusing on a different series of elements.

James, who was familiar with Mach’s work, later adopted a similar position, cast as a thesis about the basic “stuff” of the world:

My thesis is that if we start with the supposition that there is only one primal stuff or material in the world, a stuff of which everything is composed, and if we call that stuff “pure experience,” then knowing can easily be explained as a particular sort of relation towards one another into which portions of pure experience may enter. The relation itself is part of pure experience; one of its “terms” becomes the subject or bearer of the knowledge, the knower, the other becomes the object known. [James 1904/1996, p. 4]

In speaking of “subject” and “object,” James is identifying relations that occur within the sequences of pure experiences. As he had put it in the *Principles*, in which his later position was adumbrated but not fully adopted, “If the passing thought be the directly verifiable existent which no school has hitherto doubted it to be, then that thought is itself the thinker” – by which he meant that no separate subject, distinct from the stream of thought itself, need be posited (James 1890, 1:401). His pure experiences, like Mach’s elements, account for both physical object and knowing subject. The knowing subject is reduced to a set of pure experiences that may take other experiences as objects.

Finally, Russell adopted the position of James (which he also referred back to Mach):

William James, in his *Essays in Radical Empiricism*, developed the view that the mental and the physical are not distinguished by the stuff of which they are made, but only by their causal laws. This view is very attractive, and I have made great endeavours to believe it. I think James is right in making the distinction between the causal laws the essential thing. There do seem to be psychological and physical laws which are distinct from each other. We may define psychology as the study of the one sort of laws, and physics as the study of the other. [1919/1956, p. 299]

For Russell, the world is to be viewed as constituted from the momentary “particulars” of perception. These are modeled on perceptual experiences: they have the properties of being, say, roundish and reddish – which means that they literally are instances of the phenomenal quality red, this particular patch of which is round. They are presented, as we would ordinarily say, from a “point of view.” They thus have the properties Russell had earlier ascribed to sense-data – though he now withholds that term from them. He does so because he takes the term “sense-datum” to imply a datum *for someone*, that is, for an experiencing subject. But he, with James, has given up the subject. Though momentary particulars are in the first instance found in perception, they are not “given” to a subject; rather, a series of such particulars constitutes the subject. Further, Russell was willing to extrapolate from the series of experienced particulars to other series of unexperienced momentary particulars, which are nonetheless ascribed properties such as those met with in the phenomenally present instances. These would be unsensed sense-data, but for the abandonment of that term.

The perception-based character of Mach’s “elements,” James’ “primal stuff” of “pure experience,” and Russell’s “particulars” is apparent. Because of the temptation to see the elements and particulars as sensations or mental-like entities, all three authors were charged with idealism. (Sometimes in-house: Russell [1945, p. 813] later charged James with a tendency toward idealism.) They saw themselves as avoiding idealism, and also avoiding an independent, non-phenomenally characterized “thing in itself.”

We can sketch the considerations that led these authors to their shared position in four steps. They each held the empirically plausible view (E) that phenomenally characterized perceptual objects are salient in human cognition. They then confronted the worry (S) that if these are seen as subjectively-dependent states which merely represent (or phenomenally *present*) a mind- or perception-independent world, skepticism about knowledge of that external world may arise – or, less dramatically, an external world would have been posited unnecessarily. But, having been convinced of the reality of the phenomenal on empirical grounds, they also acknowledged (D) the great theoretical difficulty in reducing the phenomenal to the physical. Hence, to avoid (S) while acknowledging (E) and (D), they adopted (P), the limitation of world as it *is* (or, less dogmatically, as it is *known*) to Russellian momentary particulars. These (presumably) cannot be relegated to the “merely subjective,” since they are prime reality, and constitute the epistemic basis for all knowledge claims.

3. PHYSICALISM AND EXCLUSIVE NATURALISM

Although phenomenally characterized states retained currency in philosophy into the second half of the twentieth century (in various sense-data theories and their successors), within the science of psychology there arose a sustained effort – marching under the flag of behaviorism – to dispense wholly with phenomenal experience as both an object of explanation and source of empirical data. Though the behaviorist campaign was not absolutely successful (perceptual psychology and psychophysics continued to be pursued, relying on phenomenal reports), behaviorism set the dominant tone in American psychology well past mid-century.

The original champion of behaviorism was John Watson, who had been trained as a comparative psychologist. He endeavored to bring to the study of human beings the rigor of an animal psychology that relied exclusively on behavioral evidence. He intended to show that a behavioral psychology of human beings could dispense with introspective methods (broadly conceived, to include all phenomenal reports), and with mentalistic concepts of any kind. He offered two principal reasons for rejecting phenomenal reports and mentalistic concepts:

- (1) lack of intersubjective agreement in phenomenal reports;
- (2) embroilment in the mind-body problem.

To support (1), he pointed (1914, pp. 6–8) to the controversy over imageless thought, the disagreements among introspectionists over the degrees of clarity associated with the focus of attention, and disagreements over the dimensions of variation in sensation (e.g., whether sensations include an internal element of spatial order, or how many basic color sensations there are).

Watson considered problem (2), the mind-body problem, in connection especially with the functionalist movement in psychology (which arose in the decades prior to behaviorism).⁴ The functionalist focuses attention away from the analysis of consciousness in introspection, toward the functioning of mental states in the adjustment of organisms to the environment. Prior to the rise of behaviorism, functionalist psychology had already treated behavior as an object of explanation and source of data in psychology. But the functionalists retained a mentalistic framework of explanation, freely exploiting (according to Watson, and in fact) terms such as sensation, perception, affection, emotion, and volition. This brought them face-to-face with the mind-body problem. Watson observed that if the functionalist wants to “make mental states really appear to function, play some active role in the world of adjustment, he almost inevitably lapses into terms which are connotative of interaction” (1914, p. 9). As he saw it, functionalists tended to fall back on the language of mind-body interaction in practice, while stating their “official” position in the allegedly less problematic language of parallelism – which causally insulated their posited mental states from the bodily and behavioral activity they were intended to explain. In his view, both interaction and parallelism were problematic.

Watson was in sympathy with the biological flavor of functionalism – that is, with its notion that the organism, through the formation of habits and the like, becomes adjusted to the environment. But he rejected the functionalist’s mentalist remainder.

We advance the view that *behaviorism* is the only consistent and logical functionalism. In it one avoids both the Scylla of parallelism and the Charybdis of interaction. Those time-honored relics of philosophical speculation need trouble the student of behavior as little as they trouble the student of physics. The consideration of the mind-body problem affects neither the type of problem selected nor the formulation of the solution of that problem. [1914, p. 9]

The mind-body problem doesn’t arise, because the behaviorist does not characterize the states of the organism in mental terms at all. No mentalistically conceived states are permitted in his scientific domain, and so there is no occasion to ask how such states might be related to neural or bodily states.

The final comparison in the quoted passage, between the behaviorist and the student of physics, reveals a third factor in Watson’s brief against mentalism, though one that functioned more by rhetorical implication than explicit argument. Watson contrasted introspective psychology, which “failed to make good its claim as a

⁴ This early American functionalism is to be distinguished from the “functionalism” in philosophy of mind and philosophy of psychology that arose in the 1960s. The latter sort of functionalism may be seen as a descendant of the earlier functionalism only in versions that conceive “function” biologically. In an input-output functionalism, or input-internal state-output functionalism, the notion of “function” loses its biological connection and is reduced to the mathematical or logical notion of a function relating one state to another (on which, see Shapiro 1994).

natural science," with properly scientific behaviorism: "Psychology, as the behaviorist views it, is a purely objective, experimental branch of natural science which needs introspection as little as do the sciences of chemistry and physics" (1914, pp. 26, 27). Part of his point here has been expressed in (1), the alleged lack of intersubjective agreement, hence lack of objectivity, using introspection. But that is not the whole point. Watson's behaviorist program sought to restrict descriptions of the organism to a language that was continuous with the other natural sciences, by contrast with the (allegedly problematic) mentalistic language of even the biologically-inclined functionalists. Behaviorism, by eschewing mentalistic language and restricting itself to descriptions of observable stimuli and observable responses characterized in physical and chemical terms (or in descriptions of observable motions), removes any barriers between its descriptions and those of the other natural sciences. We thus have a third rationale for rejecting phenomenal reports and mentalistic notions:

- (3) The exclusion of mentalistic conceptions from the world as described by natural science.

Behavioristic psychology becomes continuous with paradigmatic natural sciences such as physics and chemistry. Watson was in fact a materialist reductionist, who held that in the end all sciences must reduce to physics and chemistry.⁵

Although Watson's was not the only form of behaviorism in the teens and twenties (see Roback 1923, Hatfield 2002), it was the version that captured the attention of philosophers such as Russell, Carnap, and Hempel. Russell (1921, pp. 5–6) sought to reconcile the physicalism of Watsonian behaviorism with his view that physics no longer required matter (a reconciliation to be mediated by James' neutral monism); he used phenomenally characterized particulars as the basis of both physics and psychology. Carnap, after the phenomenalism of the *Aufbau*, adopted a position of physicalism according to which all psychological statements can be translated into statements about the physical states of an organism. He expressed the position as follows: "Every psychological sentence refers to physical occurrences in the body of the person (or persons) in question" (1932/1959, p. 197). He allowed that we may (provisionally) need to describe organisms at the level

⁵ Watson made the point as follows: "This suggested elimination of states of consciousness as proper objects of investigation in themselves will remove the barrier which exists between psychology and the other sciences. The findings of psychology become the functional correlates of structure and lend themselves to explanation in physico-chemical terms" (1914, p. 28). Watson's explicit pronouncements, like Skinner's later, focus on the "methodological" point that consciousness and the phenomenal are not susceptible to scientific study (1914, pp. 27–8); but it is clear from his discussion of images that he intended to reduce all allegedly mental phenomena to implicit or explicit behavioral responses (1914, pp. 16–21), and that he intended to eliminate "mind" from the domain of what can be known and therefore from what can be said to exist from a rational, scientific perspective (the only cognitively serious perspective, by his lights).

of molar behavior, because we are (for now) unable to determine or measure the relevant neural states. Such descriptions should be seen as coarsely portraying the organism as a physical system, short of the ultimate description through "systematic assignments of numbers to space-time points." Assuming that these ultimate descriptions are properly "physical," "we can rephrase our thesis – a particular thesis of physicalism – as follows: *psychology is a branch of physics*" (p. 197).⁶ Soon thereafter, Hempel expressed the physicalist thesis as follows: "All psychological statements which are meaningful, that is to say, which are in principle verifiable, are translatable into propositions which do not involve psychological concepts, but only the concepts of physics. The propositions of psychology are consequently physicalistic propositions. Psychology is an integral part of physics" (1935/1949, p. 378).

Among the motivations for Carnap's and Hempel's physicalism (and their subsequent thesis of the logical reducibility of psychological statements to an observational, physical thing-language) was the conception that the mind-body problem was a metaphysical pseudoproblem, and that any mentalistic talk not translatable or reducible⁷ to physical (or observational thing-) language must be rejected. We have seen Hempel claim that there are no meaningful statements in psychology that include terms not translatable into the concepts of physics – as, presumably, the notion of phenomenal content alluded to earlier in this chapter would not be. Carnap also, even after weakening his post-*Aufbau* physicalism, expressed grave reservations that purely mentalistic notions, not logically reducible to the physical thing-language, could be sustained. He characterized the distinction between bodily and mental processes as arising from "the old magical and later metaphysical mind-body dualism" (1938/1955, p. 47). While allowing that this distinction might be of practical use in the early stages of scientific development, he suggested that a developed psychology would go behavioral, dropping mentalistic talk (pp. 47–9).

⁶ Carnap's physicalism of the early 1930s involved assigning determinate physical magnitudes to space-time points (e.g., 1932/1959, p. 197). Ironically, he adopted this form of physicalism just a few years after physicists had concluded that quantum theory precludes such assignments. Carnap (1963, pp. 14–15) later recalled that he had not kept up with physics after the 1920s (thus, after his work on relativity theory), and had been informed of the developments in quantum theory by Reichenbach. He does not make clear whether his learning of quantum theory was a factor in the rejection of classical physicalism in favor of a middle-sized object "thing-language" and talk of observables (talk that echoed the language of the Copenhagen interpretation of quantum theory). However, he later acknowledged that quantum theory precludes classical physicalism (1966, ch. 30).

⁷ Reduction in this case did not entail (but permitted the search for) the reduction of psychological laws to biological or physical laws; rather, it implied the translatability, or the even weaker conditional definability, of all psychological statements into statements about observable thing-predicates (Carnap 1928/1967, §§2, 35; 1938/1955, pp. 49–60).

Indeed, he purported to show that "there is a behavioristic method of determination for any term of the psychological language" (p. 59).⁸

The suggestion that mentalistic notions, including references to peculiarly phenomenal contents, are at odds with the concepts and attitudes of natural science has become widespread. All of points (1) to (3) above – lack of objectivity, difficulty in solving the mind-body problem, and the incompatibility of mental concepts with the point of view of natural science – have continued to fuel skeptical or even eliminative attitudes toward the mental. Indeed, according to a widespread conception of naturalism, by definition the natural excludes the (unreduced) mental. On this conception, for a mentalistic notion, such as phenomenal content, to be naturalized is for it to be analyzed into the non-mental (or non-phenomenal) terms of a "naturalistic" vocabulary. Because it excludes the mental and the phenomenal from the core notion of naturalism, this attitude may be termed "exclusive naturalism."⁹

At first, consonant with Watsonian (and, later, Skinnerian) behaviorism, the result was a continued rejection of all mentalistic notions. But with the development of information theory, the construction of digital computers, and the resulting computer analogy for mental processes, many philosophers and some psychologists came to believe that although the phenomenal should be rejected, there was hope for integrating mental content, propositionally conceived, into a naturalistic outlook. The ultimate result was a view that the phenomenal must either be eliminated or reduced to propositional content. We will return to this conception, and challenge it, in section 5. Meanwhile, let us consider more fully point (3), focusing on the (alleged) incompatibility of naturalism, or of the outlook of natural science, with a conception of the mental inclusive of the phenomenal.

4. THE PHYSICISTS AND THE PHENOMENAL

The tendency toward physicalism and exclusive naturalism in the middle decades of the twentieth century (carried on by Quine [1973] and others after Carnap and Hempel moderated their early physicalism) was motivated by a sense of the epistemic solidity of the science of physics. Physicalist philosophers held that physics should provide our basic view of what there is, and that phenomena that

⁸ Carnap's notion of "behavioristic" explicitly included, besides observations of molar behavior, processes internal the organism (e.g., nervous processes), dispositions to behave, and environmental effects of behavior (1938/1955, pp. 48–9).

⁹ For characteristic recent statements of "exclusive naturalism," according to which, for the intentional or the phenomenal to be natural it must "really" be something else (something material), see Dretske (1981, p. x, 1995, pp. 28, 65) and Fodor (1987, pp. 97–9). Dretske and Fodor are of course not physicalists, for they allow the possibility that reduction will not be forthcoming; but they are materialists, and use materialism as their criterion of the natural. For criticism of this theme in recent philosophy of psychology, see Hatfield (1990, ch. 7) and Shapiro (1996).

cannot be described in physical terms should form no part of our conception of reality.

Interestingly, the central members of the group that created the most profound change in physics of the twentieth century – the developers of quantum theory – did *not* share this physicalist outlook. That is, philosophically reflective physicists such as Max Planck, Erwin Schrödinger, Niels Bohr, and Werner Heisenberg did not think that the phenomenal (if unreduced) should be excluded from a complete account of reality. The particular form in which they expressed this attitude varied, as did their own philosophical outlooks (whether critical realism, neutral monism, or inclusive naturalism). But they were agreed on rejecting the demand, or even expectation, of physical reduction (whether of laws or entities) in all areas of reality, or of making physics the ultimate arbiter of what there is.

Planck was the most classically-oriented of the originators of quantum theory. (He, like Einstein, held out for the retention of a classical realism and strict causal determinism underlying quantum probabilities.) Epistemologically, he adopted a representational realism. He rejected what he termed the "positivist" conception that the aim of science is merely to concatenate and report the immediate data of the senses (1932, p. 68). Within a positivist perspective,¹⁰ one stays close to the phenomenal:

The whole world around us is nothing but an analogue of experiences we have received. To speak of this world as existing independently of these experiences is to make a statement that has no meaning. [1932, p. 70]

Planck rejected this outlook, as inadequate to the notion that scientists make discoveries pertaining to independent structures and entities. We need not rehearse those arguments, as interesting as they may be. The point of importance is that Planck intended to retain, in his conception of reality, both the immediate data of sensory experience and the commitment to an independent world that physics seeks to describe in abstraction from the qualities found in sensory experience.

In describing the data of immediate experience and the independent world of physics, Planck employed the vocabulary of the late nineteenth-century philosopher-psychologists such as Franz Brentano (1874). He spoke of an "inner realm" of experience, and an independent "outer world," posited through a metaphysical hypothesis:

We have taken a jump into the metaphysical realm; because we have accepted the hypothesis that sensory perceptions do not of themselves create the physical world around us, but rather that they bring news of another world which lies outside of ours and is entirely independent of us. [1932, p. 82]

Below, in section 5, I will qualify talk of perceptual experience as "inner." For now, we may simply note that Planck adopted a framework of critical or representational

¹⁰ Planck's unnamed positivist (1932, pp. 67–90) holds a position like that of Machian phenomenalism.

realism: our experiences inform us of a world whose underlying physical properties must be inferred, and in constructing a picture of that world we depart ever further from the givens of experience (to a description of subatomic particles and forces, curved space-time, and so on).¹¹

Schrödinger endorsed a similar picture of the relation between the world as described by physics and the world of immediate experience, but he drew a different conclusion (similar to Russell's neutral monism). He described previous scientific thought as tending toward or expressing a "principle of objectification." As science developed, it systematically excluded "the Subject of Cognizance from the domain of nature" (1958/1967, p. 127). Citing A. S. Eddington (1928) and Charles Sherrington (1940), he described the earlier course of science as excluding phenomenal qualities from the world, and ultimately excluding mind itself, with the consequence that no mind-body relation can be found in a scientific picture of the world, because mind finds no place in nature.

Schrödinger rejected the exclusion of subject and mind from nature. While admitting the practical utility of a distinction between a subjective domain of experience and an "objective" picture of physical reality, he believed that we ought "to abandon it in philosophical thought" (1958/1967, p. 137). He contended:

It is the same elements that go to compose my mind and the world. This situation is the same for every mind and its world The world is given to me only once, not one existing and one perceived. Subject and object are one. [1958/1967, p. 137]

His belief that subject and object are one did not lead him to deny the difference between a purely physical view of the world and a larger view that would include the phenomenal qualities. He maintained that neither physics nor physiology could account for the phenomenal qualities. Taking the experience of yellow as an example, he noted that the physics of wavelengths does not account for phenomenal yellow. Nor does physiology:

We could at best attain to an objective knowledge of what nerve fibres are excited and in what proportion, perhaps even to know exactly the processes they produce in certain brain cells - whenever our mind registers the sensation of yellow in a particular direction or domain of our field of vision. But even such intimate knowledge would not tell us anything about the sensation of colour, more particularly of yellow in this direction. [1958/1967, p. 168]

¹¹ Einstein, who was the least philosophically loquacious of the quantum masters, appears to have adopted (after a purportedly Machian youth) a critical or representational realism, which may be exemplified by the following quotation: "The belief in an external world independent of the perceiving subject is the basis of all natural science. Since, however, sense perception only gives information of this external world or of 'physical reality' indirectly, we can only grasp the latter by speculative means" (1934, p. 60).

He did not therefore conclude that phenomenal yellow doesn't exist, or that perceptual experience of phenomenal qualities cannot serve as a basis for objective knowledge. Indeed, he maintained that all scientific knowledge ultimately must be based on observations, which "are always of some sensual quality" (1958/1967, p. 178).

Schrödinger accepted that the scientific outlooks of Eddington and Sherrington opened an impassable gulf between subject and object. But he refused to conclude that the experiencing subject and the world of phenomenal qualities should therefore be dispensed. Rather, he looked for a philosophical position capable of reconciling subject and object. In 1925 and again in 1960, he endorsed a position like that of Mach and Russell. But he added the proviso that if forced to choose between either the material or the psychic as the basis for what is real, we would have to opt for the psychic, "since that exists anyway" (1961/1964, p. 63; also pp. 15-17).

Bohr and Heisenberg offered the most original view of the relation between mental experience and the rest of science, and of the relations among the sciences themselves. They both characterized the now-rejected perspective of nineteenth-century physics as having (mistakenly) excluded mind or subject from nature. In a lecture given at Leipzig in 1941, Heisenberg described this exclusion as the product of seeking a methodologically unified science, inspired by a mechanistic or Newtonian outlook: "Nature consisted of matter subjected, in conformity with natural laws, to change in time and space by action and reaction" (1948/1952, p. 81). This problematic outlook was unable to accommodate all the phenomena of nature, inclusive of biological and mental phenomena. Biology presents concepts not readily expressed in the Newtonian framework, such as "growth, metabolism, heredity, etc."¹² Further, "no suitable place could be found in this view of nature for that great realm of reality comprising mental processes." Such a state of affairs was not acceptable in Heisenberg's view: "we can understand that this view of nature could never be fully convincing" (1948/1952, p. 82). Bohr, too, lamented the inability of the classical picture to incorporate consciousness and the data of psychology into its view of nature, and for that reason described the classical picture as inadequate.¹³

¹² In placing concepts such as growth, metabolism, and heredity beyond the domain of classical mechanics, Heisenberg and Bohr (1934, pp. 117-19) were not endorsing vitalism. Rather, they suggested that the description of living things, including the functional language of biology, cannot be wholly translated into the language of particles and forces. While this matter has not been settled, today even reductionistically inclined philosophers of biology acknowledge that reduction seems unlikely (see Rosenberg 1985).

¹³ Bohr wrote: "Even though it was, to some extent, possible within the frame of classical physics to compare organisms with machines, it was clear that such comparisons did not take sufficient account of many of the characteristics of life. The inadequacy of the mechanical concept of nature for the description of man's situation is particularly evident in the difficulties entailed in the primitive

The position articulated by Bohr and Heisenberg may be dubbed "inclusive naturalism." It includes the mental (and, as we shall see, the phenomenal) within the domain of reality, and suggests that any view of nature which excludes such phenomena is unacceptable. Heisenberg observed that classical physics was doomed as a general scientific outlook because it could not include the mental in its conception of nature:

Of course such a methodological unity cannot justly be called a unity of the scientific conception of nature. Such a conception must, at least in principle, be able to accommodate *all* parts of nature and it must be able to allot a definite place to each sector of reality. It was precisely this demand which so clearly demonstrated the shortcomings of the views based on classical physics. In that picture of nature the mental world figures, so to speak, only as the opposite pole of a material reality incapable of accommodating it within its bounds. [1948/1952, p. 92]

Heisenberg agreed with Schrödinger that the picture of the world offered by classical physics excluded mind. For that reason (among others), he, like Schrödinger and Bohr, found that picture unacceptable.

Heisenberg was willing to allow that further scientific developments *might* eventually yield a unified description of nature that included consciousness and mental processes. But in the meantime, he had no doubts about the reality of consciousness and mentality, or about the need to include them in any conception of nature. In thus advocating an inclusive naturalism he came into agreement with an earlier conception of nature, which held sway from the time of Aristotle into the mid-eighteenth century, according to which mind is part of nature. Having contemplated the failed attempt to make classical mechanics into a theory that was adequate for all nature, he opted instead for a pluralistic attitude toward the domains of nature:

We are now more conscious that there is no definite initial point of view from which to radiate routes into all fields of the perceptible, but that all perception must, so to speak,

distinction between soul and body. The problems with which we are confronted here are obviously connected with the fact that the description of many aspects of human existence demands a terminology which is not immediately founded on simple physical pictures. However, recognition of the limited applicability of such pictures in the account of atomic phenomena gives a hint as to how biological and psychological phenomena may be comprehended within the frame of objective description" (1958, p. 91; see also 1934, pp. 117-19). Bohr obviously was not endorsing the notion of the soul, but he equally was not suggesting that the difficulty of integrating mental phenomena into the classical picture of nature was a problem for mental phenomena. The "hint" from quantum atomic theory was the notion of complementary description. The inability of physical modes of description to deal with consciousness and the mental does not entail that either description is false, just that neither provides, by itself, a complete description of nature (on which, see 1958, pp. 92-3). (This question of completeness with respect to all phenomena in nature is of course distinct from the question of the completeness of quantum theory as a description of a specifically "physical" reality - i.e., the reality described by quantum physics itself - on which see Bohr 1935/1998.)

be suspended over an unfathomable depth. When we talk about reality, we never start at the beginning and we use concepts which become more accurately defined only by their application. [1948/1952, p. 93]

In other words, we no longer can take the particles and forces of classical physics as the ultimate starting point for all explanation. We must include all domains of reality in our starting point and attempt to make progress in understanding each domain by beginning with its proper concepts and seeking to make them more precise.

The club of physicists whose work brought about the most far-reaching changes in physical theory since Newton were not physicalists. Their conceptions of reality included the contents of phenomenal experience. Bohr and Heisenberg went the furthest in articulating a novel position. They characterized the exclusive naturalism of physicalism as the quaint heritage of the old atoms-in-the-void picture of the world, and they insisted that the contents of consciousness (phenomenally conceived) be brought into the domain of the natural.

There is of course no *refutation* of physicalism here, and no inconsistency on the part of those philosopher-physicalists who might grant epistemic authority to physics but disagree with the leading physicists on the philosophical upshot of their discipline. The philosophers might simply hold that the physicists should stick to physics and stop talking about the mental and its place in nature. They might think that the physicists had gotten out of their depth, and that they, as philosophers, were better suited to drawing out the philosophical implications of physics.

At the same time, we might ask what attitude allowed the physicists to be quite comfortable and self-assured in making the pronouncement (a) that physics as classically conceived cannot explain the phenomenal, and (b) that the phenomenal will not and should not go away. We can expect that Planck, Schrödinger, Bohr, and Heisenberg (among others) were well versed in the power and limitations of physical theory (old and new). We may expect that they, better than many philosophers, would be able to extrapolate the explanatory power of physical concepts. While not according their pronouncements an absolute authority, we might nonetheless expend some effort taking into account their considered judgment about the inability of physics to explain the phenomenal. Further, given their experience with pursuing and extending an empirical attitude toward nature and with holding theory accountable to fact, we might also take seriously their conception that the phenomenal constitutes its own empirical domain, which, at least by Bohr's and Heisenberg's lights, must be incorporated into any acceptable conception of nature.¹⁴

The pronouncements of the physicists, though not having absolute authority,

¹⁴ Bohr and Heisenberg referred to the extant sciences of biology and psychology in justifying their claims about the empirically suitable concepts of those natural sciences. Among their contemporaries, the Gestalt psychologists (e.g., Koffka 1935, chs. 1-3) made a case for regarding phenomenal experience

should easily counterbalance the unsubstantiated hopes and predictions of the ordinary physicalist that the mental and the phenomenal will be reduced or eliminated through the march of science. A more properly empirical attitude might embrace the various domains of phenomena (including the atomic, the biological, and the mental, by Heisenberg's count), and leave open, pending further inquiry, the question of how they are ultimately to be related. Accordingly, a properly empirical attitude would start from an inclusive naturalism, that is, a naturalism inclusive of phenomenally-characterized mental states.

5. THE PHENOMENAL AND INCLUSIVE NATURALISM

Leaving aside the anti-phenomenalism of earlier behaviorism and physicalism, we can ask what reasons are now given for being wary of or rejecting the phenomenal. Such reasons may be metaphysical or epistemological. On the metaphysical side, a concern about fitting the phenomenal into nature has led some philosophers to seek to replace phenomenalist conceptions with ones allegedly more compatible with physicalism or materialism. Such efforts include the attempts by U. T. Place (1956), J. J. C. Smart (1962), D. Armstrong (1968), and others to reduce the concept of "sensation" to the having a certain sort of brain state;¹⁵ P. M. Churchland's (1979, ch. 2) and P. S. Churchland's (1986) eliminative materialism; and Dretske's (1995) and Tye's (1995) reduction of sensory qualities to informationally-characterized material states. Dennett's (1978, 1988) reduction of the phenomenal to the content of certain sorts of "myths" or stories we tell ourselves conforms to the more widely held view that intentionally characterized content (propositionally-conceived) is easier to square with standard naturalism than would be "qualia" or other phenomenally-characterized contents.¹⁶

On the epistemological side, Shoemaker (1996), Dennett (1988) and others have charged that phenomenal experience has characteristics of internality, privacy, and

and perceived meanings as natural phenomena, subject to natural scientific investigation (see Epstein and Hatfield 1994).

¹⁵ It might at first seem questionable to classify Place, Smart, and Armstrong among the anti-phenomenalists, for they viewed themselves as *reducing* mental concepts, including that of sensation, to states of the nervous system, and (technically speaking) reduction does not eliminate the reduced entities (see Rey 1997, pp. 22–3). But in fact the physicalism of Place, Smart, and Armstrong forsook phenomenal aspects of sensation, and reduced sensations wholly to brain states caused by paradigmatic external stimuli, so that an "orange sensation" becomes the sort of brain process we have when we "really see an orange" (Smart 1962, p. 167). Such a reduction was in effect an elimination; for discussion, see Cornman (1971, pt. 1).

¹⁶ The view that informationally characterized representations are easier to accommodate into a materialistic naturalism is widely held; it funds the approaches of Dretske (1995, pp. xiii–xiv) and Tye (1995, ch. 5); see also Rey (1997, pp. 6–10).

subjectivity which make it difficult or impossible to justify knowledge claims about the phenomenal, and which make phenomenal experience unsuitable as a basis for knowledge of a publicly available, intersubjectively discussible world of objects and events. Further, Shoemaker (1996, pp. 25–7, 224–5) has argued that claims to know the contents of phenomenal experience presuppose a "Cartesian" conception of the mind, according to which the contents of consciousness are known infallibly and with complete transparency. "Refutation" of this extreme position may then be taken as grounds for rejecting a "perceptual model" of knowledge of phenomenal states. On the further assumption that the perceptual model is the only model of knowing (unreduced) phenomenal experience, such knowledge is precluded.

A full characterization of and response to these metaphysical and epistemological objections would be a topic unto itself. Here I can merely indicate the direction such a response might take. Regarding the epistemological worries, the charge that perceptual states are "internal" and divorced from a world of intersubjectively available objects draws upon terminology used by some late nineteenth-century adherents of phenomenality: that phenomenal experience is "inner," as opposed to the "outer" experience of objects themselves (an "external world"). Allegedly, these theorists posited an "inner world," to be accessed by a special "inner sense." But this characterization is incorrect. Talk of "inner perception" was not used to characterize the spatial location of the perceptions themselves, but to focus on the relation of such perceptions to the subject experiencing them. As Wundt put the point, "the expressions outer and inner experience do not indicate different objects, but different points of view from which we take up the consideration and scientific treatment of a unitary experience" (1901/1902, pp. 2–3). The expression "point of view" might seem to bring us back to a spatial comparison, but Wundt clearly used it in the sense of mental attitude, not literal standpoint. Thus, in describing objects on the table, we may either focus on the objects themselves – a cup, a book, a pen – or on the fact that in seeing them we also have experience of a certain character, as of a cup, a book, and a pen. The experience is phenomenally "of the world" from the outset, and so does not seem to be located "internally." We do not need to take up a special attitude to externalize our sensations, or to make them seem to be of a world. Nor do we need a special "inner sense" to experience them. Simply by having the experiences we are put in a position to describe their phenomenal character (the cup appears bright red, it visually overlaps and so obscures one corner of the book, the pen is seen parallel to one edge of the book, the table top appears smooth and grey, etc.).¹⁷

¹⁷ In suggesting that phenomenal aspects of experiences can be thus described, I do not suggest that such phenomenal contents are special non-intentional "internal objects." Some authors (e.g., Robinson 1994, chs. 5, 8) have characterized sensations as "non-intentional" and therefore "internal"; they instantiate properties such as redness and roundness that serve as inner objects of perception. In my view (Hatfield 1992), one can avoid this classical sense-data position while treating phenomenal

But even if, as various perceptual psychologists have contended, the world of immediate experience is as of a world of objects, there remains the objection that each individual's experience is private, and therefore epistemically impotent. In their strongest versions, such objections rely on the problems of solipsism and skepticism about other minds. Such extreme forms of skepticism are, however, of little use in a context in which one wishes to contrast perceptual knowledge with intersubjective knowledge of a world of objects. The latter sort of knowledge can also be undermined by extreme skepticism – such as the skeptical position that all factual knowledge about objects and events more than five minutes old is negated by the skeptical “possibility” that the world came into existence five minutes ago, with all our (apparent) memories and physical records intact. Solipsism and skepticism about other minds are no more pressing than this sort of skeptical worry. And more generally, we typically are in a good position to use others' experiences to know what sort of experience we might expect in given perceptual circumstances, and hence also to know what their perceptual experience is like. As members of the same species, with like perceptual experience (subject to known and detectable differences, such as the various color deficiencies), we naturally and rightly suppose that if, when out on a walk, we indicate the color of the leaves, or point to the shape and color of the rising moon, our companion can share our experience (i.e., will experience very similar colors and shapes). Even if our experience is private in the sense of being individual, a public world is available to us because we share similar perceptual mechanisms, which yield coordinate perceptual experiences.

There remains the problem of subjectivity. It is a commonplace that when several persons view a complex event, such as an automobile accident, from different or even quite similar spatial standpoints, they may report conflicting and inconsistent descriptions of the events. In dealing with such situations, we would of course need to disentangle memory effects, emotional salience effects, and response biases (e.g., one person lives with the driver of one of the cars involved, the other was a neutral passerby). Free perception of uncontrolled events by multiple observers is not the paradigm for intersubjective agreement. Nor do the physical sciences hold up such conditions of observation as likely to produce intersubjective agreement on even the properties of middle-sized objects; observation in the physical, chemical, and biological sciences is highly structured and controlled. Lack of agreement in uncontrolled observation must be accepted by both friends and foes of phenomenal experience. The fact is that when the circumstances are controlled, as in color matching experiments (testing qualitative matches of isolated color samples), the intersubjective agreement is quite high for phenomenal properties. In these circum-

qualities as representational, without having to reduce them away by equating them with informational states (in the manner of Dretske and Tye); the phenomenal qualities found in experience may be thought of as *presenting* the surfaces of objects under a certain phenomenal aspect, which is what constitutes our *seeing* that object-surface.

stances, the charge of subjectivity collapses back on extreme skepticism, such as the inverted spectrum scenario, or other variants of solipsism and the problem of other minds.

Turning to the metaphysical side of things, let us consider first the weakness of purely propositional accounts, such as those of Dretske and Tye. Here, perception of phenomenal red is reduced to the occurrence of an informational state in the visual system that represents an objective surface property of a certain type in a location. Qualia allegedly drop out. But such accounts run afoul of the known facts about color vision, that there is no single physical property that we detect when we perceive several instances of phenomenally indistinguishable greens or reds. In color science, it has been determined that physically heterogeneous spectral properties can appear phenomenally identical (or be judged identical, to adopt non-phenomenal language). If information tracks physical states, then the spectrally heterogeneous samples should be perceived (judged) differently. But they are not in the case of “metamerism” just described.¹⁸ For the phenomenalist, this scenario simply presents a case in which identical or extremely similar phenomenal characters are produced by distinct physical stimuli. From a phenomenalist perspective, the quality of the experience depends upon the peculiar apparatus of the human perceptual system. Because the appearances (and judgments) are the same for normal perceivers in similar circumstances, this response creates no special problem of subjectivity. The physicalist may hope to explain away the facts of metamerism, perhaps by adopting a revised version of what it is to be a physical property. But *prima facie* plausibility is on the side of the phenomenalist.

I suspect that the most persistent reason for philosophical resistance to qualitatively characterized phenomenal experience is the belief that it cannot be integrated into a naturalistic picture of the world. This is the problem of fitting, say, phenomenal red into one's ontology. It is sometimes called the “hard problem” (e.g., Chalmers 1996, pp. xii–xiii; see also Levine 2001) because of the apparent conceptual or explanatory gap between phenomenal red and a physical description of the stimulus or a physicochemical description of brain activity (say, neurons firing in the visual cortex).

There are some conceptions of the status of phenomenal red that are implausible on the face of things. For instance, if it is supposed that phenomenal red is a property of a sense-datum, or of a Russellian “momentary particular,” a property of “being

¹⁸ The informationalist might argue that there is in such cases a single physical property that the perception of red is supposed to pick out (or has the function of indicating, in Dretske's terms), and that all other metameric matches are cases of misperception. This response relies on a “physical instrument” conception of the function of vision, according to which vision tries to track physical properties. It can be countered by a conception of color vision (derived from comparative study of color vision in other mammals) according to which heightened discriminability of object-surfaces, not property-detection per se, is its primary function (see Hatfield 1992).

red" must be ascribed to an experienced item distinct from the physical stimulus. This item cannot literally be identified with neurons, for they do not themselves take on the various colors of seen objects, but remain whitish or grey. As indicated at the outset, I affirm that a position attributing the property of being red to a phenomenally present item – in the same way in which the property would be ascribed to physical objects if naïve realism were true – is at best implausible. Still, it may seem that in speaking of "phenomenal red" as something that exists, I am obliged to provide an ontology of qualitative content up front. I have said it is unsatisfying to say that qualitative character must really be "something else," in the spirit of Dretske and Tye. So, what is it, on my view?

I am not prepared to answer this question here, but would suggest that lack of an immediate answer should not lead one to repudiate phenomenal red. Instead, I suggest we take a hint from the original quantum physicists, and adopt an empirically-based liberal attitude toward what may be found in nature, the attitude of inclusive naturalism. We should, on this view, simply include phenomenal red among the phenomena of nature, and thus accept that the phenomenal is itself real. From there, we might ask how its existence and characteristics are to be explained. If we don't accept substance dualism (a position that doesn't really help in explaining phenomenal qualities¹⁹), we should assume that phenomenal red depends on brain activity. In my view, we should accept the dependence of phenomenal red on brain activity as a working hypothesis, but not set it down as a condition on the acceptability of phenomenal red into the domain of natural phenomena. As I see things, at present no one has any idea of how to explain phenomenal red in terms of brain activity. There is some knowledge of the brain correlates of sensations, but no direct explanatory relation or intelligible connection between brain activity and phenomenal content (of the sort that statistical mechanics provides between the kinetic energy of the atoms or molecules of a gas and the temperature of the gas). At the same time, our theory of matter offers no assurance that we have discovered the most basic properties of matter itself – that we have found the ultimate particles and forces, or characterized the ultimate field structure, or even determined that particles and fields provide the ultimate conceptualization of matter. Further, we have no settled framework for delimiting the emergent properties, if any, of complex material systems such as the brain.

¹⁹ Though dualism may seem to help the cause of phenomenal qualities by providing a non-material home for them, it doesn't solve the problem. Dualists do not (like sense-datum theorists) think that the mind is (or is confronted with an item that is) literally red (see Hatfield 2003a, pp. 324–5). Hence, dualists are left with a seemingly unsolvable problem of accounting for the phenomenal content of sense experience, as are materialists. To allow for phenomenal qualities, each must simply accept that states of the mind or brain are such that phenomenal red occurs within our sensory experience, and continue to look for an explanation or account of that fact (or not).

I suggest that it is preferable to adopt an investigative attitude toward the relation between the phenomenal and the brain, rather than attempting to exclude phenomenal qualities from the domain of nature because they don't match our intuitions about what is consistent with present physics and our imagined extrapolation of that physics. The empirical liberalism of inclusive naturalism is consonant with a pluralistic attitude toward the domains of properties to be found in the natural world, and their interrelations.

The idea that the natural excludes the mental, or some aspects of the mental, is itself recent (see Hatfield 2002). It was not the dominant conception in the seventeenth or eighteenth centuries (despite potted histories to the contrary), when the mind was regarded as part of nature. Here, the historical sense of physicists such as Planck, Schrödinger, Bohr, and Heisenberg was on target. The conception of exclusive naturalism arose when classical physics seemed to provide a clear and adequate picture of a physical world bereft of sensory qualities, thereby making mind the (suspect) repository of what was left over. Behaviorism and physicalism (later joined by materialistic functionalism) then attempted to outlaw the mental (or merely the phenomenal) remainder.

With the demise of the classical physicalist picture of nature and the rise of a biological perspective on the senses, we are well positioned to reconsider the place of phenomenal experience in nature. We might simply accept as a fact of nature that organisms with sensory systems like ours are constituted so that at least part of our perceptual take on the world is presented via consciously available, phenomenally-characterizable perceptual experiences. Psychologists would have as part of their task describing such experience, detailing its causal conditions, and ascertaining the role it plays in cognitive and affective lives of organisms. Philosophers might try acknowledging the phenomenal as a natural fact, integrating the descriptions of psychologists or observationally astute philosophers into their descriptions of the mental, and situating that domain in a larger naturalistic and philosophical landscape, in accordance with the liberal empirical outlook recommended by our physicists in sections 1 and 4. We would thereby avoid the unsavory situation of allowing largely unexamined metaphysical assumptions about "the natural" to back us into the position of denying the obvious presence of phenomenal experience. We could then seek to construct a picture of human mentality and cognitive achievement that started from the fact that we are biological creatures endowed with a physiology that supports various cognitive states and capacities, including those of having something appear to us in some way. To paraphrase Schrödinger, we might as well acknowledge the existence of the phenomenal. It's there anyway.²⁰

²⁰ An earlier version of this chapter was presented at the Humboldt University Symposium on Mental Representation and Reality (October, 2001). I am indebted to the audience and to the organizers, Ralph Schumacher and Rolf Horstmann, for helpful comments and challenges. Recent drafts have benefited from the comments of Morgan Wallhagen, Yumiko Inukai, Holly Pitman, and Rolf Horstmann.

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